

# **BART Extension to Milpitas, San Jose and Santa Clara**

## **Community Working Groups**

### **Status Report #4 Project Update**

**Prepared by:  
Santa Clara Valley Transportation Authority (VTA)  
Planning and Programming Department**

**September 2003**

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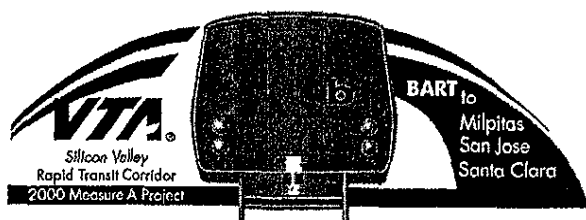
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## **BART Extension to Milpitas, San Jose and Santa Clara Status Report #4 -- Project Update**

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### **Introduction**

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This report provides an update for the Community Working Groups (CWG) on the BART Extension to Milpitas, San Jose, and Santa Clara (Figure 1). More specifically, information is presented for the following project activities:

- Environmental process
- Conceptual design
- Preliminary engineering
- Public outreach and involvement
- BART coordination efforts
- Right-of-way acquisition
- Federal Transit Administration's New Starts process
- Budget status and project funding
- Next steps

This report will be discussed with the CWGs in September 2003.

### **Environmental Process**

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VTA submitted the Administrative Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) to the Federal Transit Administration (FTA) in mid-April 2003. VTA received FTA's comments on July 28, 2003. After incorporating their comments, VTA will submit a revised document to FTA for further review, along with a revised schedule for next steps in the environmental process.

The most significant comment received from FTA was the recommendation to identify a Minimum Operating Segment (MOS) alternative for the EIS/EIR and New Starts process. This translates to building the project in phases, which would include MOS-1 for the first phase and MOS-2 to complete the full project. The FTA feels the MOS approach will make the project more competitive in the New Starts program by reducing the overall project cost and federal funding share.

# BART Extension to Milpitas, San Jose, and Santa Clara

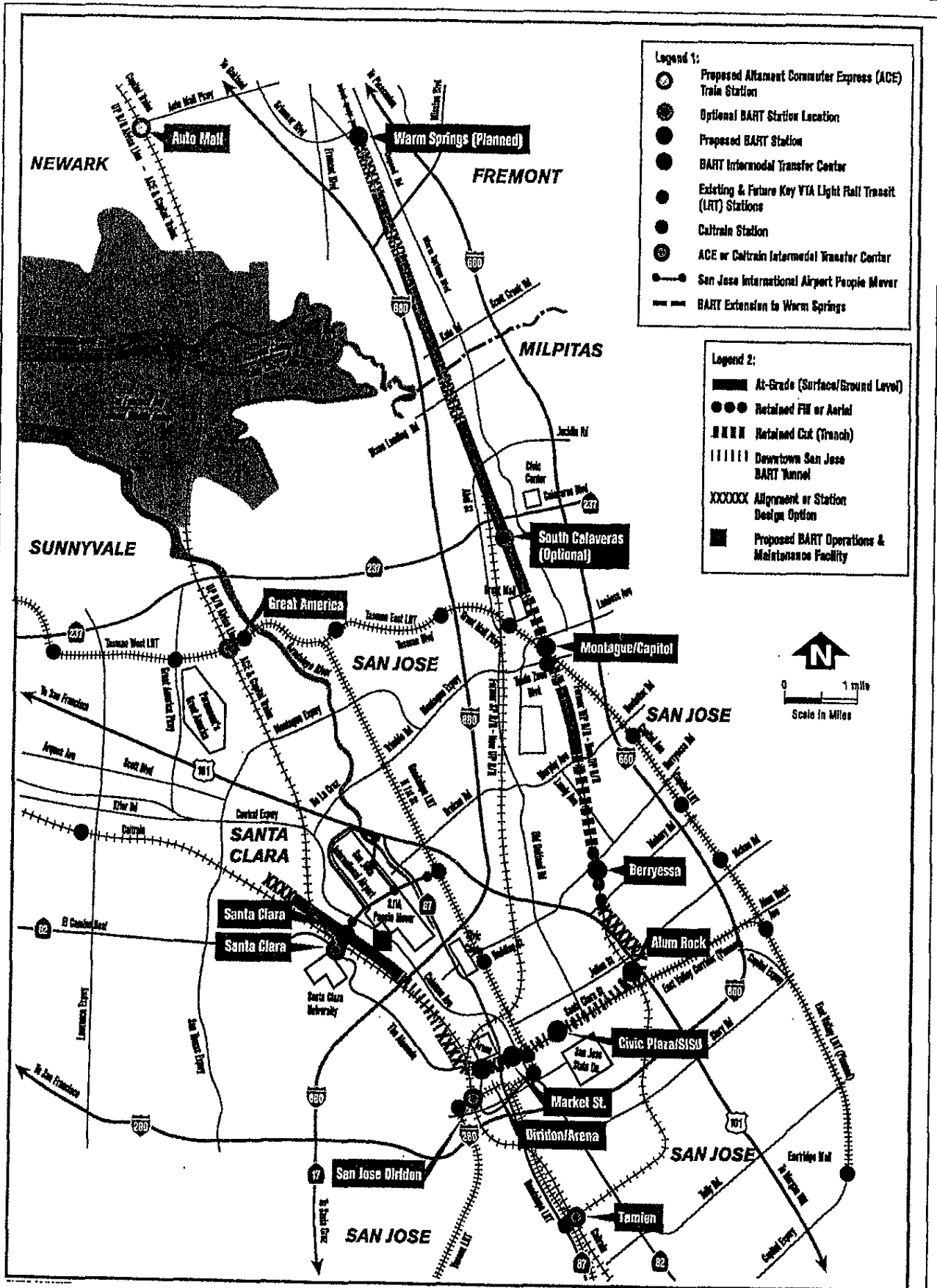


Figure 1: BART Extension to Milpitas, San Jose, and Santa Clara

In response to FTA, various MOS scenarios were developed for the Policy Advisory Board (PAB) to consider. Upon review and comment, the PAB will select one of the MOS scenarios for further analysis in the EIS/EIR and New Starts program in September 2003. These scenarios are provided in this CWG packet under a separate agenda item.

## **Conceptual Design**

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Most of the conceptual design efforts are nearing completion. This work will culminate in a 10% Conceptual Engineering (CE) package, which will be further reviewed by BART staff. In addition, a Value Engineering exercise will be performed on the 10% CE package to identify potential cost saving measures for the project.

VTA has also been conducting other special studies and design efforts in parallel with the environmental process. To the extent possible, VTA would like to complete these studies before preliminary engineering begins. Following is a status of these efforts:

- **Direct Dublin/Pleasanton BART Service Analysis (Completed)** – This study has been completed. The results will be presented to the PAB in September 2003.
- **Parking Study (On-going)** – VTA is also reviewing parking arrangements and policies of other transit agencies to address issues identified by the cities of Santa Clara and San Jose. Specific attention is being given to transit agencies that have parking facilities near airports and arenas/stadiums. This parking study will be forthcoming.
- **Construction Mitigation Issues (On-going)** – VTA is continuing to work with the City of San Jose on a Cooperative Agreement that would cover construction and other issues related to the project in San Jose. In addition, the draft Construction Impact Mitigation Plan (CIMP) is being expanded to encompass the entire limits of the BART project in San Jose, instead of just the tunnel section.
- **Issue Resolution (On-going)** – VTA and BART staffs are still working cooperatively to resolve issues that have emerged during the conceptual design phase: tunnel ventilation, downtown San Jose crossover, and platform width. A few other issues have emerged relative to cross-passages in tunnels, station emergency evacuation and vertical circulation, fleet size, and maintenance facility capacity.

## **Preliminary Engineering**

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Based on direction from the VTA Board of Directors on August 7, 2003, VTA staff is taking steps to initiate preliminary engineering for the BART Extension. Request for Proposals (RFP) for various elements of the project will be issued in the coming months. It is anticipated that the preliminary engineering consultants will begin work in early 2004. A more detailed plan and schedule for preliminary engineering will be provided to the CWGs in the coming months.

## **Public Outreach and Involvement**

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VTA will be conducting four Community Working Group (CWG) meetings in September 2003 to update them on the project, discuss the MOS scenarios, and receive a presentation on the Lessons Learned Report – Construction of Major Transit Projects. The CWG meetings will be held as follows: Milpitas on September 8, 2003, Downtown San Jose on September 10, 2003, Santa Clara on September 11, 2003, and Hostetter/Alum Rock on September 15.

## **BART Coordination Efforts**

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In addition to supporting the EIS/EIR process and conceptual design efforts, BART staff has taken the lead on the following:

- **BART Core Impact Study (Phase 1 Complete)** -- BART has prepared a draft BART Core Impact Study that identifies the core BART system modifications necessary for the operation of the extension and those required to mitigate resulting impacts.
- **Design Standards Update (On-going)** -- BART has also developed draft facilities design standards. Upon completion, these updated design standards will be used for preliminary engineering.

VTA and BART staffs are still determining the next steps for these work efforts.

## **Right-of-way Acquisition**

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VTA continues to coordinate with BART and Alameda County Transportation Agency to resolve outstanding issues related to property acquisition of the railroad right of way. VTA is also evaluating the option to purchase the Union Pacific Railroad's Newhall Yard to preserve it for future transportation use.

## Federal Transit Administration's New Starts Process

VTa submitted an annual update of the FTA's New Starts Report on August 29, 2003. The previous submittal was based on project information from the Major Investment Study/Alternatives Analysis completed in November 2001. As a result, the New Starts update includes new information that has been prepared for the EIS/EIR document, including ridership, cost estimates, and cost effectiveness data.

VTa will continue to work with FTA to resolve issues relative to the project's rating in the New Starts program. This includes VTA's financial status, travel demand modeling efforts, and the development of a Minimum Operating Segment.

## Budget Status and Project Funding

The capital cost for the BART Extension included in the Administrative Draft EIS/EIR is estimated at \$3.838 billion in mid-2001 dollars as shown in Table 1. This number would escalate to \$4.112 billion in today's dollars (2003) and \$4.976 billion in year of expenditure dollars (through 2013).

Table 1: Capital Costs for the BART Extension	
Principal Components	Cost
Construction	\$1,565,827,000
Right-of-Way	\$439,038,000
Vehicles	\$320,940,000
Engineering, Contingencies and Reserves	\$1,512,672,000
<b>TOTAL</b>	<b>\$3,838,477,000</b>
<b>Note:</b> All costs in mid-2001 dollars and reflect least costly design options to establish a "Base Case" estimate.	

VTa has developed a funding strategy for the BART Extension that relies on three key sources: local sales tax and other funding sources, state funds, and Federal Section 5309 New Starts, as shown in Table 2.

Table 2: Sources of Capital Funding for the BART Extension		
Source	Funding Amount (Millions)	
	2001 Dollars	2003 Dollars
VTa Local Sales Tax Measure A and Other <sup>1</sup>	\$2,355	\$2,629
State Traffic Congestion Relief Program (TCRP)	\$649	\$649
Federal Section 5309 New Starts	\$834	\$834
<b>TOTAL</b>	<b>\$3,838</b>	<b>\$4,112</b>
<b>Note:</b> <sup>1</sup> Other includes possible state and local funds, as well as potential joint development.		

VTa has a current TCRP funding allocation of \$45 million to conduct the environmental and conceptual engineering phases of the project, which was included in the State of California's Fiscal Year 2003/2004 budget. No additional TCRP funding was budgeted for preliminary engineering or right of way. However, VTA will continue to ensure eligibility for reimbursement of these activities in such time that TCRP funds are appropriated.

In addition, the federal Fiscal Year 2003 Omnibus Appropriations Bill, which was signed into law by President Bush on February 20, 2003, provided \$250,000 for preliminary engineering work for the BART Extension. FTA just recently approved the grant for this federal funding.

On August 7, 2003, the VTA Board of Directors adopted a resolution authorizing VTA to issue bonds secured by and payable from 2000 Measure A in an amount not to exceed \$550 million. The Board allocated \$170 million of this amount to conduct preliminary engineering for the project.

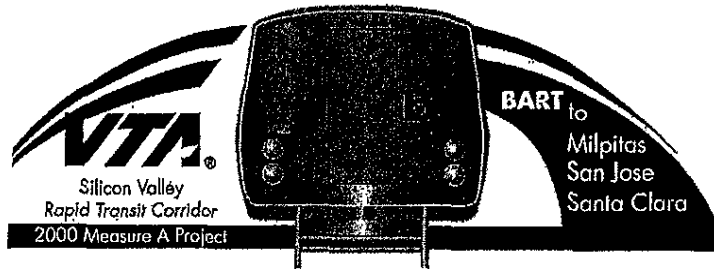
## **Next Steps**

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Following are the key next steps in the project development process:

- Respond to FTA's comments on the Administrative Draft EIS/EIR, including the development of a Minimum Operating Segment. Revise environmental document and schedule based on feedback from FTA.
- Resolve FTA's issues relative to the New Starts process.
- Complete conceptual design, special studies, and issue resolution items prior to beginning preliminary engineering.
- Initiate preliminary engineering.





## **BART Extension to Milpitas, San Jose, and Santa Clara Minimum Operating Segment Scenarios**

**Prepared by:  
Santa Clara Valley Transportation Authority (VTA)  
Planning and Programming Department**

**In Consultation and Cooperation with the  
Earth Tech Consulting Team**

**August 2003**

# **BART Extension to Milpitas, San Jose, and Santa Clara**

## ***Minimum Operating Segment Scenarios***

### **A. Introduction**

The Federal Transit Administration (FTA) is recommending that the VTA develop a BART Extension Minimum Operating Segment (MOS) that can be included in the Environmental Impact Statement/Environmental Impact Report (EIS/EIR), as well as the New Starts process. This translates to building the project in phases, which would include MOS-1 for the first phase and MOS-2 to complete the full project. The FTA feels the MOS approach will make the project more competitive in the New Starts program by reducing the overall project cost and federal funding share.

### **B. Purpose**

The main purpose of the MOS will be for evaluation in the FTA's New Starts process to help secure federal funding for the project. The intent of MOS-1 is to reduce the cost for the initial phase of the project, thereby decreasing the federal funding contribution. Federal funding can also be sought later for MOS-2.

It is important to note that VTA remains committed to the full BART Extension to Milpitas, San Jose, and Santa Clara, as approved by Santa Clara County voters in November 2000 and adopted by the VTA Board of Directors as the Locally Preferred Alternative (LPA) in November 2001. As a result, the environmental document and the New Starts program will continue to focus on the full LPA, with the MOS being incorporated as an alternative for evaluation purposes.

### **B. BART Extension Alternative**

The BART Extension Alternative would extend BART 16.3 miles from Fremont in Alameda County to the cities of Milpitas, San Jose, and Santa Clara in Santa Clara County (Figure 1). Seven stations are proposed. The alignment would run at-grade, above ground or in a trench, with approximately 4.5 miles of subway through downtown San Jose. A new 240-car capacity maintenance and storage facility and 106 rail cars also are needed to operate the project. The San Francisco and Richmond BART lines would be operated on the extension, with combined 6-minute headways.

Total capital costs in 2001 dollars are estimated to be \$3.838 billion for the BART Extension. Annual operating and maintenance (O&M) costs are \$60.7 million in 2001 dollars.

Average weekday ridership in the year 2025 is projected to be 83,600. Boardings and alightings in 2025 for the seven (7) proposed BART Extension stations are as follows:

<b><u>Rank</u></b>	<b><u>Station</u></b>	<b><u>Boardings/Alightings</u></b>
1.	Market Street:	23,885
2.	Montague/Capitol:	22,574
3.	Santa Clara:	20,324
4.	Diridon/Arena:	14,884
5.	Alum Rock:	11,355
6.	Berryessa:	11,238
7.	Civic Plaza/San Jose State University (SJSU):	8,608

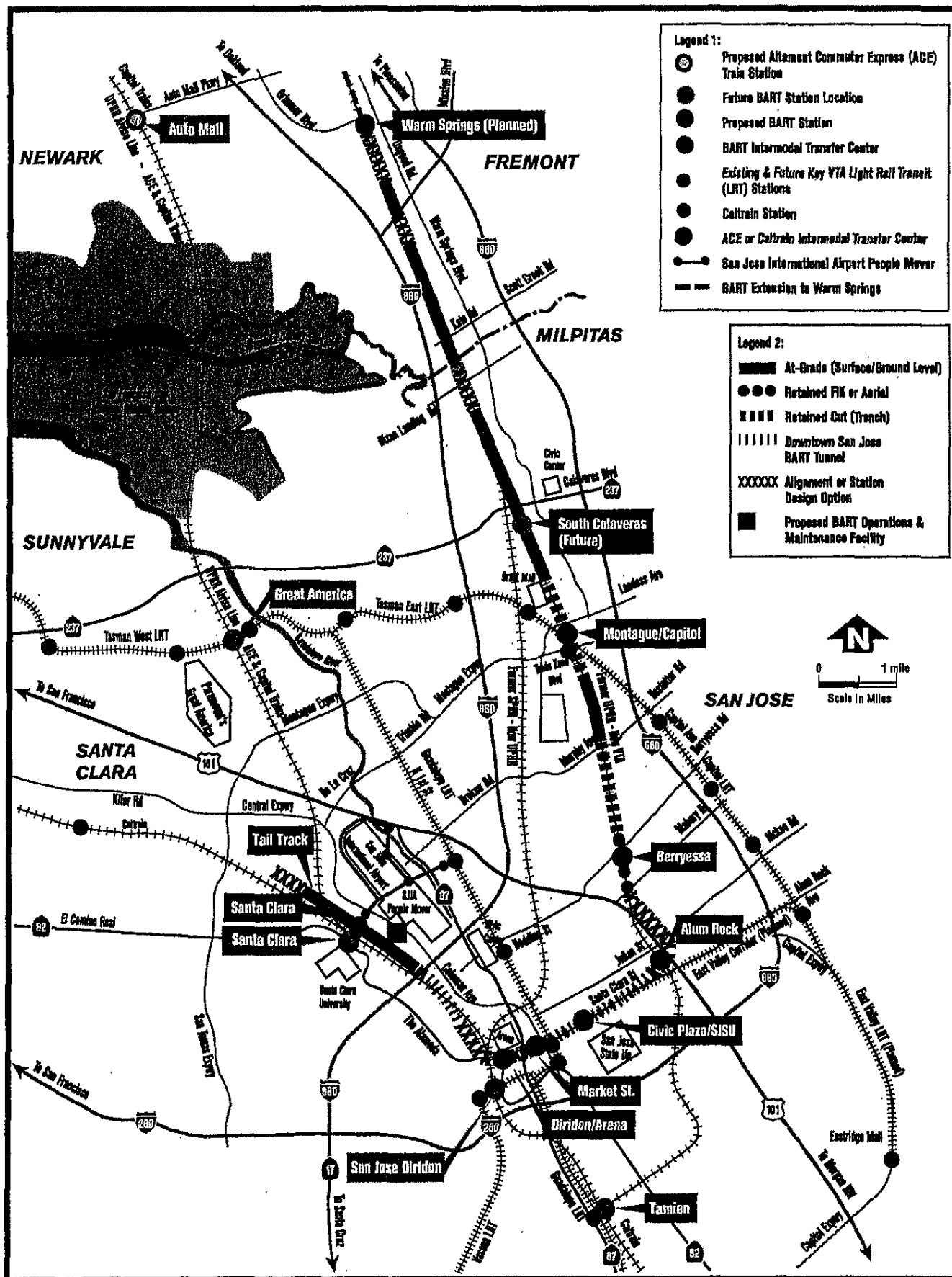


Figure 1: BART Extension to Milpitas, San Jose, and Santa Clara

## C. Minimum Operating Segment Scenarios

Based on FTA's recommended direction, four MOS scenarios have been developed for the Policy Advisory Board to consider. The main goals of the MOS are to reduce costs and minimize ridership loss. In addition, since the ultimate objective is to build the entire extension, "throwaway" project elements and associated costs should be avoided. It also was assumed that the project must go to downtown San Jose, with some scenarios continuing to Santa Clara. The MOS scenarios will also require new storage and maintenance facilities due to capacity constraints at existing BART yards. Upon review and comment, one of the MOS scenarios will be selected for further analysis in the EIS/EIR and New Starts process.

- 1) **MOS Scenario 1A: Builds MOS-1 to Downtown San Jose including three stations and truncating the alignment just north of I-880; defers four stations and the remaining alignment to MOS-2.**
  - i. Complete construction of the extension, including the entire 4.5-mile long subway, to just north of I-880 (14.83 route miles).
  - ii. Build the Montague/Capitol, Alum Rock, and Market Street stations, as well as the downtown San Jose crossover track west of the Civic Plaza/SJSU Station.
  - iii. Defer the Berryessa, Civic Plaza/SJSU, Diridon/Arena, and Santa Clara stations.
  - iv. Build shell and platform for the two deferred subway stations (Civic Plaza/SJSU and Diridon/Arena).
  - v. Operate the San Francisco and Richmond BART lines to Market Street, with combined 6-minute headways.
  - vi. Reduce the initial vehicle purchase to 68, deferring 38 vehicles to MOS-2.
  - vii. Build a primary and secondary BART vehicle maintenance (no heavy repair functions) and storage facility for approximately 180 cars at the "Newhall Yard." Existing BART facilities would need to be used for heavy repair activities.
  - viii. Property would still be purchased for all seven stations, maintenance facility, and construction staging areas.
- 2) **MOS Scenario 1B: Builds MOS-1 to Downtown San Jose, including four stations (adds the Diridon/Arena station) and truncating the alignment just north of I-880; defers three stations and the remaining alignment to MOS-2.**
  - i. Complete construction of the extension, including the entire 4.5-mile subway, to just north of I-880 (14.83 route miles).
  - ii. Build the Montague/Capitol, Alum Rock, Market Street, and Diridon/Arena stations, as well as the downtown San Jose crossover track west of the Market Street Station.
  - iii. Defer the Berryessa, Civic Plaza/SJSU, and Santa Clara stations.
  - iv. Build shell and platform for the one deferred subway station at Civic Plaza/SJSU.
  - v. Operate the San Francisco and Richmond BART lines to Diridon/Arena, with combined 6-minute headways.
  - vi. Reduce the initial vehicle purchase to 68, deferring 38 vehicles to MOS-2.
  - vii. Build a primary and secondary BART vehicle maintenance (no heavy repair functions) and storage facility for approximately 180 cars at the "Newhall Yard." Existing BART facilities would need to be used for heavy repair activities.

- viii. Property would still be purchased for all seven stations, maintenance facility, and construction staging areas.

3) **MOS Scenario 1C: Builds MOS-1 to Santa Clara, including four stations (replaces the Diridon/Arena Station with the Santa Clara Station); defers three stations to MOS-2.**

- i. Complete construction of the entire extension, including the entire 4.5-mile subway, to the Santa Clara Station (16.32 route miles).
- ii. Build the Montague/Capitol, Alum Rock, Market Street, and Santa Clara stations, as well as the downtown San Jose crossover track at either location (to be determined).
- iii. Defer the Berryessa, Civic Plaza/SJSU, and Diridon/Arena stations.
- iv. Build shell and platform for the two deferred subway stations (Civic Plaza/SJSU and Diridon/Arena).
- v. Operate the San Francisco and Richmond BART lines to Santa Clara, with combined 6-minute headways.
- vi. Reduce the initial vehicle purchase to 86, deferring 20 vehicles to MOS-2.
- vii. Build a primary and secondary BART vehicle maintenance (no heavy repair functions) and storage facility for approximately 180 cars at the "Newhall Yard." Existing BART facilities would need to be used for heavy repair activities.
- viii. Property would still be purchased for all seven stations, maintenance facility, and construction staging areas.

4) **MOS Scenario 1D: Builds MOS-1 to Santa Clara, including four stations (replaces the Alum Rock Station with the Diridon/Arena Station); defers three stations to MOS-2.**

- i. Complete construction of the entire extension, including the entire 4.5-mile subway, to the Santa Clara Station (16.32 route miles).
- ii. Build the Montague/Capitol, Market Street, Diridon/Arena, and Santa Clara stations, as well as the downtown San Jose crossover track at either location (to be determined).
- iii. Defer the Berryessa, Alum Rock, and Civic Plaza/SJSU stations.
- iv. Build shell and platform for the two deferred subway stations (Alum Rock and Civic Plaza/SJSU).
- v. Operate the San Francisco and Richmond BART lines to Santa Clara, with combined 6-minute headways.
- vi. Reduce the initial vehicle purchase to 86, deferring 20 vehicles to MOS-2.
- vii. Build a primary and secondary BART vehicle maintenance (no heavy repair functions) and storage facility for approximately 180 cars at the "Newhall Yard." Existing BART facilities would need to be used for heavy repair activities.
- viii. Property would still be purchased for all seven stations, maintenance facility, and construction staging areas.

## **D. Preliminary Analysis of MOS Scenarios**

This preliminary analysis looks at the advantages and disadvantages of the MOS scenarios, as shown in Tables 1 through 4. The MOS scenarios were evaluated in terms of ridership, costs, key markets served, intermodal connections, joint development, maintenance facility, and community acceptance.

- 1) **MOS Scenario 1A**: Builds MOS-1 to Downtown San Jose, including three stations and truncating the alignment just north of I-880; defers four stations and the remaining alignment to MOS-2.

<b>Table 1: MOS Scenario 1A</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<p><b><u>Ridership</u></b> Serves three (3) strategic station locations, generating approximately 56,600 average weekday riders (68 percent of total).</p>	<p>Defers four (4) stations to MOS-2: Berryessa, Civic Plaza/SJSU, Diridon/Arena, and Santa Clara. Loses greatest number of riders (27,000).</p>
<p><b><u>Costs</u></b> Defers \$676 million in capital costs.  Defers \$15.4 million in annual O&amp;M costs.</p>	<p>Cost of constructing the four postponed stations will be more expensive later.</p>
<p><b><u>Key Markets Served</u></b> Provides direct BART service to downtown San Jose with the Market Street Station.  The Civic Plaza/SJSU and Diridon/Arena stations are in close proximity to the Market Street Station, which can serve those patrons.  Provides US 101 access at Alum Rock Station for transit riders coming from south and east San Jose, as well as other cities to the south.  Alum Rock Station is not dependent on Taylor/Mabury interchange; already has US 101 access at Julian and Santa Clara streets.  Berryessa Station is in relatively close proximity to the Montague/Capitol and Alum Rock stations, which can serve those patrons.</p>	<p>No direct BART service is provided to Civic Plaza or San Jose State University.  Alum Rock Station would attract the entire US 101 park-and-ride traffic.  No BART service to the City of Santa Clara, including industrial parks and Santa Clara University.</p>
<p><b><u>Intermodal Connections</u></b> Montague/Capitol, Alum Rock, and Market Street stations have link with VTA's light rail.</p>	<p>No Caltrain, Altamont Commuter Express (ACE), Capitol Corridor Intercity Rail (Capitols), or Amtrak direct connections at either the Diridon/Arena or the Santa Clara stations.  No High Speed Rail (HSR) direct connection at the Diridon/Arena Station.  No Automated People Mover (APM) direct connection the Norman Y. Mineta San Jose International Airport at the Santa Clara Station.</p>

<p><b><u>Joint Development</u></b> The Berryessa Station could be developed in conjunction with a joint development project at the San Jose Flea Market site.</p> <p>Other stations may have the potential to be constructed as a joint development project, such as the Diridon/Arena Station.</p>	<p>The stations would not be available as a catalyst to help stimulate development.</p>
<p><b><u>Maintenance Facility</u></b> Provides new BART O&amp;M facility for approximately 180 cars.</p>	<p>Heavy repairs would have to be performed at BART's Hayward Shops complex, which may have capacity limits; increased O&amp;M costs may also be incurred.</p>
<p><b><u>Community Acceptance</u></b></p>	<p>Does not provide BART service to all three cities along the corridor, which is inconsistent with commitment to Santa Clara County voters to extend BART to Milpitas, San Jose, and Santa Clara.</p>

- 2) **MOS Scenario 1B: Builds MOS-1 to Downtown San Jose, including four stations (adds the Diridon/Arena Station) and truncating the alignment just north of I-880; defers three stations and the remaining alignment to MOS-2.**

Table 2: MOS Scenario 1B	
Advantages	Disadvantages
<p><b><u>Ridership</u></b> Serves four (4) strategic station locations, generating approximately 63,500 average weekday riders (76 percent of total).</p>	<p>Defers three (3) stations to MOS-2: Berryessa, Civic Plaza/SJSU and Santa Clara. Loses 20,000 riders.</p>
<p><b><u>Costs</u></b> Defers \$571 million in capital costs.  Defers \$11.8 million in annual O&amp;M costs.</p>	<p>Cost of constructing the three postponed stations will be more expensive later.</p>
<p><b><u>Key Markets Served</u></b> Provides direct BART service to downtown San Jose with the Market Street and Diridon/Arena stations.  The Civic Plaza/SJSU Station is in close proximity to the Market Street Station, which can</p>	<p>No direct BART service is provided to Civic Plaza or San Jose State University.  Alum Rock Station would attract the entire US 101 park-and-ride traffic.</p>

<p>serve those patrons.</p> <p>Provides US 101 access at Alum Rock Station for transit riders coming from south and east San Jose, as well as other cities to the south.</p> <p>Alum Rock Station is not dependent on Taylor/Mabury interchange; already has US 101 access at Julian and Santa Clara.</p> <p>Berryessa Station is in relatively close proximity to the Montague/Capitol and Alum Rock stations, which can serve those patrons.</p>	<p>No BART service to the City of Santa Clara, including industrial parks and Santa Clara University.</p>
<p><b><u>Intermodal Connections</u></b></p> <p>Montague/Capitol, Alum Rock, and Market Street stations have link with VTA's light rail.</p> <p>Connections to Caltrain, ACE, Capitols, Amtrak, VTA's light rail, and HSR are provided at the Diridon/Arena Station.</p>	<p>No Caltrain, ACE, Capitols, or Amtrak direct connections at the Santa Clara Station, as well as no link to the airport via an APM.</p>
<p><b><u>Joint Development</u></b></p> <p>The Berryessa Station could be developed in conjunction with a joint development project at the San Jose Flea Market site.</p> <p>Other stations may have the potential to be constructed as a joint development project.</p>	<p>The stations would not be available as a catalyst to help stimulate development.</p>
<p><b><u>Maintenance Facility</u></b></p> <p>Provides new BART O&amp;M facility for approximately 180 cars.</p>	<p>Heavy repairs would have to be performed at BART's Hayward Shops complex, which may have capacity limits; increased O&amp;M costs may also be incurred.</p>
<p><b><u>Community Acceptance</u></b></p>	<p>Does not provide BART service to all three cities along the corridor, which is inconsistent with commitment to Santa Clara County voters to extend BART to Milpitas, San Jose, and Santa Clara.</p>



- 3) **MOS Scenario 1C: Builds MOS-1 to Santa Clara, including four stations (replaces the Diridon/Arena Station with the Santa Clara Station); defers three stations to MOS-2.**

<b>Table 3: MOS Scenario 1C</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<p><b><u>Ridership</u></b> Serves four (4) strategic station locations, generating approximately 64,000 average weekday riders (77 percent of total).</p>	<p>Defers three (3) stations to MOS-2: Berryessa, Civic Plaza/SJSU and Diridon/Arena. Loses 19,600 riders.</p>
<p><b><u>Costs</u></b> Defers \$461 in construction costs.  Defers \$8.1 million in annual O&amp;M costs.</p>	<p>Cost of constructing the three postponed stations will be more expensive later.</p>
<p><b><u>Key Markets Served</u></b> Provides direct BART service to downtown San Jose with the Market Street Station.  The Civic Plaza/SJSU Station is in close proximity to the Market Street Station, which can serve those patrons.  Provides US 101 access at Alum Rock Station for transit riders coming from south and east San Jose, as well as other cities to the south.  Alum Rock Station is not dependent on Taylor/Mabury interchange; already has US 101 access at Julian and Santa Clara.  Berryessa Station is in close proximity to the Montague/Capitol and Alum Rock stations, which can serve those patrons.  Serves the City of Santa Clara, including industrial parks and Santa Clara University.</p>	<p>No direct BART service is provided to Civic Plaza or San Jose State University.  Alum Rock Station would attract the entire US 101 park-and-ride traffic.</p>
<p><b><u>Intermodal Connections</u></b> Montague/Capitol, Alum Rock, and Market Street stations have link with VTA's light rail.  Connections to Caltrain, ACE, Capitols, and Amtrak are provided at the Santa Clara Station, including a link to the airport via an APM.</p>	<p>No Caltrain, ACE, Capitols, Amtrak, or HSR direct connections at Diridon/Arena Station.</p>

<p><b><u>Joint Development</u></b> The Berryessa Station could be developed in conjunction with a joint development project at the San Jose Flea Market site.</p> <p>Other stations may have the potential to be constructed as a joint development project.</p>	<p>The stations would not be available as a catalyst to help stimulate development.</p>
<p><b><u>Maintenance Facility</u></b> Provides new BART O&amp;M facility for approximately 180 cars.</p>	<p>Heavy repairs would have to be performed at BART's Hayward Shops complex, which may have capacity limits; increased O&amp;M costs may also be incurred.</p>
<p><b><u>Community Acceptance</u></b> Provides BART service to all three cities along the corridor, which upholds commitment to Santa Clara County voters to extend BART to Milpitas, San Jose, and Santa Clara.</p>	

- 4) **MOS Scenario 1D: Builds MOS-1 to Santa Clara, including four stations (replaces the Alum Rock Station with the Diridon/Arena Station); defers three stations to MOS-2.**

Table 4: MOS Scenario 1D	
Advantages	Disadvantages
<p><b><u>Ridership</u></b> Serves four (4) highest ridership stations, generating approximately 71,600 average weekday riders (86 percent of total).</p>	<p>Defers three (3) stations to MOS-2: Berryessa, Alum Rock, and Civic Plaza/SJSU. Loses 12,000 riders.</p>
<p><b><u>Costs</u></b> Defers \$470 million in capital costs.</p> <p>Defers \$7.5 million in annual O&amp;M costs.</p>	<p>Cost of constructing the three postponed stations will be more expensive later.</p>
<p><b><u>Key Markets Served</u></b> Provides direct BART service to downtown San Jose with the Market Street and Diridon/Arena stations.</p> <p>The Civic Plaza/SJSU Station is in close proximity to the Market Street Station, which can serve those patrons.</p> <p>Serves the City of Santa Clara, including industrial parks and Santa Clara University.</p>	<p>No direct BART service is provided to Civic Plaza or San Jose State University.</p> <p>Does not provide US 101 access for transit riders coming from south and east San Jose, as well as other cities to the south.</p> <p>Increases demand and access at Montague/Capitol Station.</p>

<p><b><u>Intermodal Connections</u></b>  Montague/Capitol, Diridon/Arena, and Market Street stations have link with VTA's light rail.</p> <p>Connections to Caltrain, ACE, Capitols, and Amtrak are provided at both the Diridon/Arena and the Santa Clara stations</p> <p>Link to the airport is provided at the Santa Clara Station via an APM.</p> <p>Connections to future HSR are provided at the Diridon/Arena Station.</p>	
<p><b><u>Joint Development</u></b>  The Berryessa and Alum Rock stations could be developed in conjunction with a joint development project.</p>	<p>The stations would not be available as a catalyst to help stimulate development.</p>
<p><b><u>Maintenance Facility Capacity</u></b>  Provides new BART O&amp;M facility for approximately 180 cars.</p>	<p>Heavy repairs would have to be performed at BART's Hayward Shops complex, which may have capacity limits; increased O&amp;M costs may also be incurred.</p>
<p><b><u>Community Acceptance</u></b>  Provides BART service to all three cities along the corridor, which upholds commitment to Santa Clara County voters to extend BART to Milpitas, San Jose, and Santa Clara.</p>	

## E. Conclusions

### **MOS Scenario 1A**

- Constructs three (3) strategic stations at: 1) Montague/Capitol (the major gateway to Silicon Valley jobs with transfers to VTA buses and light rail); 2) Alum Rock (the gateway to east and south San Jose and communities further to the south); and 3) Market Street (downtown San Jose, SJSU, convention center, arena, etc).
- Attracts approximately 56,600 daily riders (approximately 68% of the 83,600 total riders forecast for the entire extension with seven stations).
- Defers approximately \$676 million in initial capital costs (approximately 18% of the total cost estimate for the entire extension with seven stations) and \$15.4 million in annual O&M costs.

### **MOS Scenario 1B**

- Constructs four (4) strategic stations at: 1) Montague/Capitol (the major gateway to Silicon Valley jobs with transfers to VTA buses and light rail); 2) Alum Rock (the gateway to east and south San Jose and communities further to the south); 3) Market Street (downtown San Jose, SJSU, convention center, arena, etc); and 4) Diridon/Arena (Caltrain, ACE, Capitols, Amtrak, VTA light rail and HSR transfers, residential areas in southwest San Jose and beyond, western portions of downtown, arena, etc).
- Attracts approximately 63,500 daily riders (approximately 76% of the 83,600 total riders forecast for the entire extension with seven stations).
- Defers approximately \$571 million in initial capital costs (approximately 15% of the total cost estimate for the entire extension with seven stations) and \$11.8 million in annual O&M costs.

### **MOS Scenario 1C**

- Constructs four (4) strategic stations at: 1) Montague/Capitol (the major gateway to Silicon Valley jobs with transfers to VTA buses and light rail); 2) Alum Rock (the gateway to east and south San Jose and communities further to the south); 3) Market Street (downtown San Jose, SJSU, convention center, arena, etc); and 4) Santa Clara (Caltrain, ACE, Capitols, Amtrak, APM, and Line 22 bus transfers, Santa Clara University, and Santa Clara industrial parks).
- Attracts approximately 64,000 daily riders (approximately 72% of the 83,600 total riders forecast for the entire extension with seven stations).
- Defers approximately \$461 million in initial capital costs (approximately 12% of the total cost estimate for the entire extension with seven stations) and \$8.1 million in annual O&M costs.

### **MOS Scenario 1D**

- Constructs the four (4) highest ridership stations at: 1) Montague/Capitol (the major gateway to Silicon Valley jobs with transfers to VTA buses and light rail); 2) Market Street (downtown San Jose, SJSU, convention center, etc.); 3) Diridon/Arena (Caltrain, ACE, Capitols, Amtrak, VTA light rail and HSR transfers, residential areas in southwest San Jose and beyond, western portions of downtown, and arena); and 4) Santa Clara (Caltrain, ACE, Capitols, Amtrak, APM, and Line 22 bus transfers, Santa Clara University, and Santa Clara industrial parks).
- Attracts approximately 71,600 daily riders (approximately 86% of the 83,600 total riders forecast for the entire extension with seven stations).
- Defers approximately \$470 million in initial capital costs (approximately 12% of the total cost estimate for the entire extension with seven stations) and \$7.5 million in annual O&M costs.

## **F. Recommendations**

VTA staff is recommending that the Policy Advisory Board select MOS-1D for further analysis in the environmental document and New Starts process. This MOS scenario preserves the greatest ridership (86%), while reducing the capital costs by \$470 million and annual O&M expenses by \$7.5 million. In addition, it serves all three cities along the corridor – Milpitas, San Jose, and Santa Clara – upholding the commitment to Santa Clara County voters. Intermodal connections are also maintained at the Montague/Capitol, Market Street, Diridon/Arena, and Santa Clara stations, with important connections to the Norman Y. Mineta San Jose International Airport via an APM and future HSR at the Diridon/Arena Station.

VTA can also seek additional federal funding for the MOS-2 elements of the project sometime in the future. The deferred stations can also possibly be built as part of joint development projects.

## **G. Next Steps**

The selected MOS scenario will need to be further defined and evaluated. This will involve refined travel demand forecasts and cost estimates, along with other necessary environmental impact analysis. This information will then be incorporated into the Draft EIS/EIR document and FTA's New Starts process. Once FTA has reviewed the Draft EIS/EIR with the incorporated MOS scenario, it can then be released for public circulation. The timing of this release is dependent on FTA's review.

**Table 5: Summary of BART Extension Alternative versus Minimum Operating Segment Scenarios**

Description	Route Length (Miles)	# of Stations	Deferred Stations <sup>3</sup>	Average Weekday Ridership / Change (2025)	# of Vehicles / Change	Maintenance Facility <sup>4</sup> (Location / Capacity / Type <sup>5</sup> )	Capital Costs / Change (2001\$)	O&M <sup>6</sup> Costs / Change (2001\$)
<b>BART Extension</b>	16.3	7	South Calaveras	83,600	106	Newhall Yard / 240 vehicles / Heavy	\$3.838 Billion	\$60.7 Million
<b>MOS SCENARIOS</b>								
<b>MOS-1A:</b> Full subway with Montague/Capitol, Alum Rock <sup>1</sup> , & Market Street stations.	14.8	3	Berryessa, Civic Plaza/SJSU, Diridon/Arena, & Santa Clara	56,600 (-27,000)	68 (-38)	Newhall Yard / 180 vehicles / Light	\$3.163B / (-\$676M)	\$45.3M / (-\$15.4M)
<b>MOS-1B:</b> Full subway with Montague/Capitol, Alum Rock, Market Street, & Diridon/Arena stations.	14.8	4	Berryessa, Civic Plaza/SJSU, & Santa Clara	63,500 (-20,100)	68 (-38)	Newhall Yard / 180 vehicles / Light	\$3.268B / (-\$571M)	\$48.9M / (-\$11.8M)
<b>MOS-1C:</b> Full subway with Montague/Capitol, Alum Rock, Market Street <sup>2</sup> , & Santa Clara stations.	16.3	4	Berryessa, Civic Plaza/SJSU, & Diridon/Arena	64,000 (-19,600)	86 (-20)	Newhall Yard / 180 vehicles / Light	\$3.377B / (-\$461M)	\$52.6M / (-\$8.1M)
<b>MOS-1D:</b> Full subway with Montague/Capitol, Market Street, Diridon/Arena, & Santa Clara stations.	16.3	4	Berryessa, Alum Rock, & Civic Plaza/SJSU	71,600 (-12,000)	86 (-20)	Newhall Yard / 180 vehicles / Light	\$3.368B / (-\$470M)	\$53.2M / (-\$7.5M)

**Notes:**

<sup>1</sup>If Berryessa Station was built instead of Alum Rock, an additional \$12 million would be saved but it would be dependent on a Taylor/Mabury Interchange.

<sup>2</sup>If Diridon/Arena Station was built instead of Market Street, it would cost \$58 million more due to parking facilities.

<sup>3</sup>Assumes shell and platform would be built for subway stations and right of way would be acquired for all stations.

<sup>4</sup>BART's current maintenance facilities are at capacity; as a result, new storage facilities are needed along the extension.

<sup>5</sup>Type = Type of maintenance activities; Heavy = major overhaul repair; Light = minor maintenance.

<sup>6</sup>O&M = operating and maintenance costs.